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ABSTRACT

In order to meet the needs of the students in a small rural school (Corbett High School in Oregon), 3 projects have been instituted which are geared to individual student interest, vocational choice, and ability. The first project, a non-graded language arts program, was developed by existing staff. Students in grades 9 through 12 are grouped by their abilities and interests to earn the 16 quarter credits needed for graduation. Information on problems such as record keeping and cost and equipment requirements is included in the document, as well as descriptions of the 26 courses offered. The second project, an optional vocational-related math course, allows for small group or individualized instruction with the use of free time as a physical reinforcer. The third project, a laboratory-oriented science program, allows the ninth-grader to use the discovery method in his physical science course. (LS)

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[The Corbett Report on Non-Graded Language Arts, Functional Mathematics Option, and Introductory Physical Science.]

CORBETT REPORT - January 1970

TITLE OF PRACTICE: Corbett High School Non-Graded Language Arts Program

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SUMMARY: The Non-Graded Language Arts Program at Corbett High School was developed to better meet the various needs of students, to provide better co-ordination of instruction in composition, literature, speech, and drama, to provide more choice for the students in fulfillment of language arts graduation requirements, and to better utilize the talents, interests, and preparation of teachers. Twenty-six nine week* courses in composition, literature, speech-drama, basic skills, and electives are offered to the 185 students in grades nine through twelve by the equivalent of two and a half full-time teachers. Students change courses, and often change teachers, each quarter, taking, at least, sixteen quarters to fulfill graduation requirements.

* Reading, Advanced Journalism, and Annual are full year courses.

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TEXT:

A. ANTECEDENTS:

1. IDENTIFICATION OF NEEDS:

Prior to the development of the Non-Graded Language Arts Program, the Corbett High School English department taught Freshman, Sophomore, Junior, and Senior English, Speech, and Journalism. Besides following state approved texts and curriculum guides in language and literature, no formal curriculum or scope and sequence existed. Generally each class was divided into two sections with ability grouping inconsistent at best. Students tended to remain with the same half of the class from grade school through their senior year in high school. Additionally, the ability and interest range was great within each class section. The staff questioned the assumption that because students were in the same age group that they shared the same abilities and interests. "Why", we asked, "should all fourteen and fifteen year olds take the same class which, of necessity, had to be directed to the average interests of the whole group?" The staff worked on individualized and group instruction but inflexible facilities, lack of paraprofessional help, and widely divergent abilities and interests made the task difficult and the results unsatisfactory. Many students regarded compulsory English classes with built-in resentment and resisted instruction. They saw little relevance in the anthologized literature selections, in repetition of grammar drill, and in hit-or-miss composition exercises. We asked, "What could be done with limited staff and rigid facilities to make Language Arts instruction more exciting and relevant?"

Our answer is that a combination of required basic skills classes with free student choice of electives would allow students to learn necessary fundamentals (such as paragraph development, basic

speech forms, and simple literary analysis and terminology) and also allow them to pursue personal interests. We also think that interest and ability should determine class placement rather than age. Age, we feel, is a poor criterion for placement. Most subjects can be condensed into meaningful, independent nine-week segments with definite and definable goals. Such an assumption requires a precise statement of goals, detailed planning, and intensified effort to meet the goals in the time allowed. When the nine weeks period is over, the students go on to their next classes. Both students and teachers work harder but the knowledge that the class will be completed in nine weeks seems to stimulate everyone to greater effort. Another benefit is improved discipline, possibly because both students and teachers know they are not obligated for more than a nine week duration. Classes of shorter duration with well-defined goals permit less time for inactivity in class.

2. HISTORY OF DEVELOPMENT:

When it was first decided that a better English program was needed, letters were sent to a number of schools of all sizes asking about innovative programs currently in use. From the replies, we selected schools to visit which had programs that might be relevant to our needs. We made several visitations on released school time. For the remainder of the 1967-68 school year we worked on course descriptions, scheduling, personnel assignments, and materials. We had three language arts teachers: One a specialist in speech-drama, another in composition, and the third in literature. Each teacher developed the curriculum outline for her speciality.

In the late spring, we administered tests in grammar, spelling, and composition to grades eight through twelve for placement and for analysis.

We also consulted the eighth grade teachers in placement of incoming freshmen. Students then registered for classes for the 1968-69 school year and the teachers, not being on extended contracts left for the summer.

B. DESCRIPTION OF THE PRACTICE:

The Corbett High School Non-Graded Language Arts Program consists of twenty-six subjects (see attached list) with the expectation that more subjects can be added when there are fewer sections of the required subjects in which many of the upperclassmen are now enrolled (e.g., Introduction to Speech). Students may request new subjects and we are considering offering some electives in alternate years to give students more choice.

Corbett High School has a seven period day and most teachers teach six periods. Our Language Arts staff consists of one full time and three part-time teachers who are responsible for music, counseling, and the library, respectively. A Business Education teacher teaches a section of Business English. Another teacher has responsibility for the Annual. We have approximately forty-eight quarters of staff time available for scheduling. (A quarter is equivalent to one nine week period.) Reading, Advanced Journalism, and Annual are one year courses and most students stay for the entire duration. All students are required to have four quarters of Language Arts per year but in a few cases there are schedule conflicts which require adjustments. All Language Arts scheduling changes are handled through the department to reduce confusion in the office.

Students may also take more than four quarters of Language Arts classes a year and we have a number of students signed up for as many as eight classes. Freshmen and sophomores have more requirements than juniors and seniors who are often glad to take more than the required number

of Language Arts classes to avoid study halls or to pursue individual interests. We tried to schedule as many periods in-depth as possible so that students would have more choices. We were not entirely successful but most students have two available choices each period. Ideally, all Language Arts teachers should be assigned the same preparation time so that plans and ideas could be worked out together. Another possible problem to consider after the program has been in effect for several years is that juniors and seniors might have difficulty in finding enough classes that they have not previously taken. This has not been a problem thus far. Corbett High School does utilize Mt. Hood Community College to supplement the curriculum in all discipline areas.

Our Language Arts staff has found that the organization and record-keeping needs of the program are more complex than before and student aides are being used to help the teachers. A copy of the Language Arts transcript is kept on file in the department to facilitate placement and help in counseling. Since each nine week quarter is independent, there is no Language Arts semester average grade. We have developed a separate addendum to show all Language Arts credits on the permanent transcript.

The Corbett School District is not wealthy. This program has been developed to work on a low income budget. We have made do with old literature anthologies, grammar texts, and sample materials. However, in 1969-70, the year of the new textbook adoption we were able to purchase new materials to enhance and enliven our new program. We have been trying to do away with "textbooks" as much as possible in favor of paperbacks, collections of relevant materials, audio-visual materials, and room sets of texts. Some students buy their own paperbacks. We have twenty-five field trips in the budget mainly for the Speech-drama classes. These are enrichment and re-enforcement activities which may be cancelled if money

is short. Naturally, more adequate funds for the Language Arts budget would enable the staff to concentrate on innovative and relevant learning experiences for each student at Corbett High School.

C. TIPS FOR THE IMPLEMENTOR:

1. The master class schedule must be viewed as a schedule-within-a-schedule. At Corbett High School the Non-Graded Language Arts schedule was developed first. The remainder of the Master Schedule was then charted to allow students to enroll in classes of their choice and to keep conflicts to a minimum. It is felt that this approach to scheduling offers satisfactory results.
2. At Corbett High School (enrollment 185) an arbitrary minimum enrollment of eight students was established in determining the feasibility of offering a particular course of study. If fewer than eight students elected to enroll in a specific subject, that subject was not scheduled.
3. Pre-registration is done in April of the preceeding year. This allows staff members the opportunity of becoming involved in scheduling and determining the needs of students by reviewing the histories of the enrollees.
4. Staff selection for a successful program in a small high school is essential. The following qualities must be considered:
   a.) Each person must be industrious and willing to work cooperatively with all staff members but especially with others in the Language Arts Program. Personal friendships are not essential.
   b.) Each person involved in the Non-Graded Language Arts Program must be convinced that such a program offers the best possible learning situation for students. A non-believer could scuttle the program.
   c.) In choosing staff members individual teaching preparation and preference must be considered in order to maintain balance.

5. At Corbett High School the Language Arts staff approves and implements all scheduling and schedule changes within their department. Records are kept within the department on each student. The staff plots individual student progress and helps that student to plan his language arts studies. The main office is advised for paperwork purposes only.

D. VITAL STATISTICS:

A non-graded language arts program should not be substantially more expensive than the traditional program, especially if materials and equipment are purchased over a three or four year period. Our program has operated on virtually no money for instructional materials, so we can only suggest necessary materials for the average district, indicating what we feel would be necessary for optimum success.

Individual literature and language texts for each student should not be necessary; instead, room sets of approved texts for use during a quarter should be available. To supplement texts, generous department paperback collections in fields relevant to classes (i.e., Contemporary Novel) are recommended. Suitable magazines and newspapers for the department are necessary. The magazines and newspapers should be considered consumable. For the composition sequence, an extensive transparency set which would cost several hundred dollars, but which would be usable for many years, is suggested.

Field trips, film rental, and speaker costs should also be considered. The Speech-drama classes and the Journalism classes would benefit most from such activities. Our library had adequate reference materials for the new program and this helped to provide supplementary materials for class work.

Equipment needs for the new program are modest; a department tape recorder, overhead projector, and record player, and an adequate budget for

audiovisual materials. Such additions would benefit all departments of the school.

We feel the savings in textbook expenditures would offset, to some degree, the cost of many of the requested items. Careful budgeting for a three or four year period would insure that the program costs would be modest in comparison to other discipline areas. Finally, a para-professional aide would be a welcome addition and a distinct advantage to our new program. A part-time para-professional could aid in other discipline areas, also.

E. EVALUATION:

The Corbett High School Non-Graded Language Arts Program is in the middle of the third year. One complete year was spent in research and planning. During that year a traditional program was in effect. During the next school year the non-graded program was put into effect. The staff has no statistical data to show improvement over the traditional program so we can comment only on the improvements and difficulties we have noted. Generally, the whole high school staff and our staff especially have noticed improved student attitudes towards Language Arts classes. Whether this enthusiasm is because the novelty of the new program has not worn off or will be a permanent part of the program remains to be seen. Our staff feels that the quarter system with changes every nine weeks does promote enthusiasm which will last because both students and teachers face new experiences and new challenges. One evidence of enthusiasm is the number of students who have enrolled for more than the four required quarters of Language Arts classes.

The program proposed for Corbett High School was geared to meet the needs of our students. Any district contemplating the adoption of a non-graded program should first list the needs to be met and then develop a

program to meet these needs. Briefly, here are the needs we felt existed at Corbett High School and the features of our program which met those needs. Corbett is a small rural community in eastern Multnomah county from which the majority of students will seek employment or marriage following graduation. 40% will go on to community colleges or to four year colleges. Our program should then have vocational and academic opportunities. Our first need was a program to provide a number of motivational class choices for each student. We met this need by combining required basic skills classes with as many electives as possible which reflected a wide variety of interests.

Secondly, the new program had to group students by interest and ability rather than by age. By non-grading, students enrolled in classes according to their educational needs and abilities, and their interests. In the traditional program, the teachers were expected to cover grammar, composition, literature, speaking and listening skills, reading development, and so on each year. It was impossible to do all areas in depth, so most teachers skimmed the material, concentrating on speciality or interest areas. Often basic skills such as paragraph writing were assumed rather than taught. Some students knew more about a subject at the first of the course than others did at completion. Our new program provided in-depth study in many areas by concentrating on a specific topic for nine weeks. Within a sequential framework, as in the composition program, students studied composition for three required quarters, giving all students basic preparation in composition. All students are placed in the program according to individual needs. Other subject areas also benefit from in-depth exposure.

For students who needed remedial help and for all students in basic skills areas, the traditional program did not provide systematic, sequential learning experiences. The new program provided basic skills experiences

before application so that students who were assigned an expository paper on marine plant life would know how to organize their writing.

The traditional program locked students into English for four years. Often the same group of students went through several years of the same class schedules together which did not always provide optimum learning situations. The new program is structurally flexible with approximately forty-eight teacher periods and twenty-six classes available. Students switch classes, classmates, and teachers every nine weeks providing stimulating new experiences for teachers and students. New classes requested by students, staff, or unmet needs could easily be "plugged in" to the schedule. Elective classes could also be rotated on a two, three, or four year plan to provide more choices for students. Possible class selections are limited only by the imagination of the participants.

In the traditional program we were concerned about the best utilization of time available. The teachers did their best to plan effectively but goals, even for single teaching units, often fell victim to the pressures of assembly schedules and the realization that classes would go on after the nine weeks period ended. Having classes of one nine week period has forced us to be more economical and direct in our planning and has led us to seek more immediate results and goals. At the beginning of each quarter the goals are outlined to the class and the time planned for activities. Both students and teachers have been accomplishing more in less time with fewer complaints. Because the class ends in the forseeable future, students seem willing to work harder.

Now that the needs for the Corbett High School Non-Graded Language Arts Program have been identified and our program has been related to these needs, some shortcomings of the program should be briefly discussed. The grading compromise we have reached is not entirely satisfactory as long as all other

classes are on a semester basis. To reconcile quarter grades and semester grades easily still needs to be solved.

Some scheduling problems have occurred. A clerical aide or a conscientious secretarial student could keep track of schedules and keep changes up to date. The staff needs to be available for counseling and placement to insure students are in the proper classes.

Staff recommendations indicate that Introduction to Speech and Mass Media need more than one quarter for adequate development. Introduction to Speech and Advanced Speech may be offered during the same period in two consecutive quarters with logical division of subject matter for those students interested in more than the required Introduction to Speech. Reading, a full year course now, will be changed to a one quarter developmental Reading course with students electing it once a year as many years as they wish.

The Corbett High School Non-Graded Language Arts Program has transformed Language Arts instruction from a static, tradition-bound approach to an innovative, enthusiastic exploration of various topics for limited periods of time. The problems involved in the implementation of the program are more than compensated by the benefits to students and teachers. The teachers experience less frustration and more satisfaction in their classrooms and note professional growth and enthusiasm. Students are eager to explore new topics and enjoy the change in teacher, class, and classmates. Even parental interest has been stimulated by home discussion of schedule choices. All in all the community of Corbett has felt a change and the faculty is proud to have helped to implement it!

Corbett High School Non-Graded Language Arts Program List of Classes

Composition (Three of first four courses required in sequence)

Paragraph Development
Theme Development
Expository Writing
Advanced Composition
Creative Writing

Literature (First two courses required)

Introduction to Fiction and Biography
Introduction to Poetry and Drama
Contemporary Novel
Contemporary Poetry
American Literature
English Literature
Mythology
Greek Tragedy
Shakespeare
Comedies
Tragedies

Speech-Drama (First two required)

Introduction to Speech
Introduction to Drama
Debate
Contemporary Drama
Readers Theatre
Advanced Speech

Basic Skills

Reading (Full year now - will be made elective on need)
Grammar (Required upon failure of test for freshmen)
Spelling-Vocabulary

Electives

Survey of Mass Media
Business English
Reading and Conference
Annual (full year course)
Introduction to Journalism
Advanced Journalism (full year course)

Proposed Additions

The Bible as Literature
Seminar
Parliamentary Procedure

A partial description of the content of some of our courses is detailed on the following pages:

COMPOSITION

PARAGRAPH DEVELOPMENT

Philosophy: Paragraph Development is the first in the sequence of composition courses. The main purpose of this class is to practice narrative, descriptive and expository forms of writing in the paragraph. Students explore as many writing skills as possible through daily practice. The topic sentence, the orderly development of ideas, and the use of supporting evidence are emphasized in expository writing.

Content:

A. Narrative Writing
   1. use of skits and familiar incidents for topics
   2. handouts with topic suggestions and examples of writing
   3. novel to be read and examined for narrative style

B. Descriptive Writing
   1. examination of words which contribute to descriptive effects
      a. adjectives, adverbs, nouns, verbs
      b. phrases, clauses
   2. topics and samples from personal experience and handouts

C. Expository Writing
   1. extensive practice with the topic sentence until familiar with topic sentence
      a. handouts
      b. student created activities
   2. orderly development of ideas supporting topic sentence
      a. facts and statistics
      b. examples and extended examples
      c. cause and effect
      d. comparison and contrast
      e. reasons
   3. proper documentation using one or several methods of development

D. Sentence Structure
   1. using modifiers correctly
      a. dangling modifiers
      b. misplaced modifiers
   2. sentence variety
   3. agreement

Necessary Materials:

A. SRA overhead transparencies
B. From Thought to Theme, William M. Clark, J. Weston Walch Publishers, Box 1075 Portland, Maine, 1965
C. Teacher made materials

Additional Comments: An adequate textbook and the transparency set could make the first three composition courses much easier to teach and more effective. Some teacher-made materials and flexibility in assignments are desirable to adapt the course format to the special needs of each class. For example, one class wrote letters to soldiers in Viet Nam for a project.

THEME DEVELOPMENT

Philosophy: In Theme Development the student will learn to incorporate single paragraphs into a larger theme. He will learn differences in various forms of writing and methods of presentation. Planning the theme with a synopsis and maintaining reader interest are stressed. Sentence structure is studied in conjunction with writing form.

Content:

A. Achieving reader interest
   1. current topic
   2. theme-universality
   3. detail
   4. humor
   5. conflict
   6. being understood
   7. satisfactory ending

B. Theme forms
   1. narrative
   2. description
   3. explanation-factual news approach, slanted
   4. exposition-opinion backed up with facts and statistics
   5. argumentation

C. Flexibility in planning form

D. Revising the rough draft

E. Sentence structure (partially a review from paragraph)
   1. co-ordination and subordination
   2. clear reference
   3. placement of modifiers
   4. parallel structure
   5. sentence variety

Necessary Materials:

1. From Thought to Theme, William M. Clark, J. Weston Walch, Publisher, Box 1075, Portland, Maine, 1965.
2. Warriner's English Grammar and Composition, Grade 11, ch. 19-23.
3. SRA overhead transparencies
4. teacher prepared handouts.

EXPOSITORY WRITING

Philosophy: Writing which explains or exposes is the most common kind of writing which a student does. This course is designed to teach students the various approaches and purposes of expository writing. Each student should write a minimum of one major paper per week plus ungraded writing activities

during the week which prepare him for the major assignment. He studies writing models and discusses uses of each kind of expository paper.

Content:

A. Composition
   1. basic exposition paper
   2. process composition
   3. extended definition
   4. analysis (basic)
   5. analysis of a poem or prose
   6. opinion paper
   7. argumentation and persuasion

B. Sentence Structure
   1. co-ordination and subordination
   2. clear reference
   3. placement of modifiers
   4. parallel structure
   5. unnecessary shifts in sentences
   6. sentence concisencess
   7. sentence variety
   8. appropriate vocabulary

Necessary Materials:

A. Developing Writing Skills, William W. West, Prentice-Hall, Inc., Englewood Cliffs, N.J.
B. Warriner's English Grammar and Composition Complete Course
C. SRA overhead transparencies

ADVANCED COMPOSITION

Philosophy: Advanced Composition is the last in the sequence of composition courses. The main purpose of this class is to learn how to prepare a research paper in an orderly manner learning about and using appropriate reference materials. The preparation of the paper from the selection of the topic to the final typed draft, as well as effective note-taking and research techniques, is studied.

Content:

A. The précis, an exercise in note-taking
   1. selected exercises in Warriner's, pp. 422-432
   2. a sample from student's text book
   3. short article from World Book or Compton's Encyclopedia
   4. short part of article in Collier's or Encyclopedia Britannica
   5. comparison of original article to condensation in Reader's Digest

B. Selection and approval of topic with short bibliography
C. Continued investigation of topic and preparation of working bibliography
D. Preparation of notecards on reading
E. Sentence outline of purposed paper (review outline form)
F. Rough draft with footnote notations.

G. Typed final draft (use form in Fundamentals of a Research paper)
   1. title page
   2. topic outline
   3. body without footnotes
   4. footnote page numbered consecutively
   5. bibliography

Necessary Materials:

A. Warriner's English Grammar and Composition, Complete Course
   1. the précis, pp. 422-432
   2. the research paper, pp. 464-484
B. Leahy, William Fundamentals of the Research Paper, Kenneth Pub. Co. @25¢

Additional Comments: The success of Advanced Composition depends on continual teacher-student consultation on the various steps of the paper. All facets of the research process must be clearly understood by each student and each deadline must be met satisfactorily for success in the class.

CREATIVE WRITING

Philosophy: The student closely analyzes himself and his relationship to other people and the world around him. Honest, uninhibited writing as well as learning skills and techniques of writing is the goal of this course.

Content:

A. Setting
B. Human relationships
C. Aims and techniques in narrative
D. Characterization
E. Dialogue
F. Mood
G. Theme
H. Writing a short story
I. Manuscript form and writing for publication
J. Line cutting and phrase revising
K. Wide reading of contemporary novelists

Necessary Materials:

A. The Process of Creative Writing, Pearl Hogrefe, Harper and Row, New York, 1963 (Teacher reference)
B. Varied examples from contemporary novels of each technique discussed.

Additional Comments: The student does much practice writing in class and outside of class, but only one major assignment per week need be graded.

LITERATURE

INTRODUCTION TO FICTION AND BIOGRAPHY

Philosophy: This introductory course is a prerequisite for all other literature courses. Because of this it will be composed mainly of underclassmen. The basic literature elements are studied through the short story and magazine fiction and are reinforced through an individualized reading project.

Content:

- A. Biography
- B. Short Story
  - 1. literary terminology
    - a. plot
    - b. tone
    - c. setting
    - d. character
    - e. theme
    - f. suspense
    - g. foreshadowing
    - h. irony
    - i. conflict
    - j. crisis
    - k. climax
    - l. resolution
- C. Group teaching
- D. Magazine analysis
- E. Individualized reading project

Necessary Materials:

- A. A short story anthology
- B. Availability of magazines, novels, and biographies
- C. Various library sources of biographical resources

INTRODUCTION TO POETRY AND DRAMA

Philosophy: This class is an introductory course in poetry and drama, with major emphasis on form, structure, and content. It is a required class and will be composed mainly of underclassmen.

Content: (History-Values of Drama and Poetry)

- A. Structure and terminology of poetry
- B. Types of poems and their meanings
- C. Structure and terminology of plays
- D. Types of plays and their settings
- E. Original poetry - read, critiqued and restructured
- F. Interpretative poetry, read
- G. Recorded plays, critiqued and reconstructed
- H. Original scripts - read critiqued (dramatic)
- I. Written analysis of poetic and dramatic readings

Necessary Materials:

A. Tapes - see - speech
B. Paperback poetry anthologies
C. Recorded readings
D. Field trips to local theatres and colleges to observe and critique plays

Additional Comments: As this is one of the few required literature classes, this class might well be broadened to extend to a one semester course which could be divided into historical periods.

CONTEMPORARY NOVEL

Philosophy: Learning methods of critiquing and analysis, as well as becoming familiar with contemporary novelists, is the goal of this class.

Content:

A. Study and compare the style of influential novelists such as Hemmingway, Faulkner, and Joyce.
B. Discuss background biographical information of authors studied
C. Discuss significance of impact on society and insight to society's problems which are offered by authors being studied
D. Individualized project where students read several novels from an approved list (Student will choose scope of his project, i.e., 2 novels of same style, 2 novels depicting same social problem.)

Necessary Materials:

A. Classroom sets of paperback novels (four sets suggested)
B. List of contemporary novels of significance
C. Availability of many contemporary novels on library shelves.

Additional Comments: The approach to this class depends greatly on the literary background of the students and teacher. The availability of materials is also important. A good supply of classroom sets of paperbacks is essential for success of the class. The content suggested here is only one of many possible approaches.

MYTHOLOGY

Philosophy: The Mythology course examines the major myths of the Greek and Roman world with relevant history and geography. The principal gods, heroes, and stories are studied with special attention paid to the epic, the Odyssey, and to a Greek tragedy.

Content:

A. Introduction to Mythology and principal gods.
   1. skits to show development of myths
   2. mythological creation stories
   3. principal gods
      a. hand out genealogy chart and map
      b. explanation of Greek and Roman religious practices
      c. movies of Greece and Rome

B. Development of the concept of the hero

C. The Epics
   1. Iliad
   2. Odyssey
   3. Aeneid

D. Greek Tragedy
   1. Oedipus Rex
   2. Antigone
   3. Medea

E. Miscellaneous stories and myths

Necessary Materials:

A. Books
   1. Edith Hamilton, Mythology paperback
   2. Adventures in Literature, Harcourt, Brace and World-class set (Odyssey)

B. Movies
   1. Four-part Oedipus movie from county office
   2. Italy and Greece geography movies
   3. Odyssey

C. Records
   1. Oedipus Rex
   2. Antigone
   3. Medea

D. Assorted supplementary materials
   1. The Voyage of the Argo
   2. Books and plays
   3. Ulysses Found by Ernle Bredford, Harcourt, Brace and World, C 1963.

Additional Comments: Mythology class explores a new world for students and the possibilities for enrichment are many. More supplementary materials and class sets of the Odyssey and of plays would insure that all students could use these materials. Many students have asked that advanced mythology courses be offered, possibly the epic or tragedy.

SPEECH-DRAMA

INTRODUCTION TO SPEECH

Philosophy: It is the philosophy of this course that it should serve as a functional bridge between actual life experience and the classical speech forms. The emphasis is largely practical and the content is designed to provide a survey of the more common types of speeches encountered in ordinary life.

In making this course a required course for all underclassmen, the English staff is helping to bridge the gap between communicants that has characterized much of this generation.

Content:

A. Introductions
B. Interviews
C. Process Demonstration
D. Interpretation of Poetry
E. Informative (with visual aid = expository)
F. Debate
G. Persuasive (Speech to Actuate)
H. Symposium
I. Impromptu
J. Extemporaneous

Necessary Materials:

A. National Debate Question Brief (see Debate materials)
B. At least one good daily paper
C. One or two weekly magazines
D. Budgeted funds for tourney and transportation fees
E. Tapes and reels
F. Recorder

Additional Comments: This course needs to be extended to two (2) quarters. Possibly the second quarter could be called advanced speech which would cover the more polished forms of oratory, expository, poetry, humorous and serious interp. and formal impromptu and extemp..

INTRODUCTION TO DRAMA

Philosophy: It is the philosophy of this course to provide technical background for basic drama productions. Some beginning acting techniques are discussed as well as historical precedences but the thrust of the course is to provide training for beginning actors and directors of high school drama.

Content:

A. The Stage and Its Parts
B. Lighting (light plot required for one memorized scene)
C. Set Production (scene and sound design required for one memorized scene)
D. The Play: its parts and precedents
E. Types of plays - their selection
F. Movement and blocking of cuttings (blocking required for one memorized scene)
G. Diologues - prepared - read and memorized - vocal intentions required.
H. Monologues - prepared
I. Improvisations - unrehearsed
J. Assigned jobs in one of the two school plays

Necessary Materials:

A. Field trips to free amateur theaters or low cost local ones
B. Three or four records of contemporary plays
C. Tapes from speech area
D. Paperback drama texts or anthologies

Additional Comments: This class offers a nice opportunity for integration of material when offered the same quarter as a class play. The class can make up their own situations for other students, and an additional extension might be the inclusion of improvisations where affection, effection, action and conflict are required.

DEBATE

Philosophy: This class is designed to provide competitive experience for those students who have had Speech I and who would be willing to work outside of class on the National Debate topic.

Content:

A. Debate manners, style, and function
B. The history of Debate, types and order-structure
C. The concept of needs and plan - terminology
D. Evaluating evidence and correctly documenting it
E. In class pair up Oxford partners - In-class debate and in-class impromptu - extemp practice
F. Taking of the flow sheet and following arguments
G. A debate brief showing issues, arguments, evidence encountered for the National Debate Question

Necessary Materials:

A. Periodicals (expendable) mentioned earlier
B. National Debate materials mentioned earlier
C. One good daily newspaper mentioned earlier

Additional Comments: This course should serve as advanced speech and forensic clubs would more than likely stem from this group of students.

Students are encouraged to take more than one quarter as this class will be on going in scope.

CONTEMPORARY DRAMA

Philosophy: This class should follow the beginning drama class and should provide more advanced training for student directors and actors. This class should provide the basis for student positions of responsibility in the plays and should deal with more polished contemporary works.

Content:

A. Review of terminology, stage, light and sound problems
B. Memorized scene showing conflict (monologue); written justification of scene

C. Improvisations showing conflict-action
D. Memorized diologue (critiqued and repeated)
E. Criterion for selection of plays - selection for three one act plays - produced by school
F. Casting criterion - cast class for one universally learned diologue
G. Properties - problems - props - monologues made up using property lists for school plays
H. Light, set designs for specific plays selected and character sketches for each character

Necessary Materials:
A. Field trips to local theater
B. Paperback contemporary anthologies
C. One or two records of contemporary plays (included before)

Additional Comments: The prequsite for this class should be Drama I, and the students can well use leadership skills and responsibilities given here if they are primarily upper-classmen.

BASIC SKILLS

READING

Philosophy: Reading is presently a year course but will be changed next year to a nine-week course stressing developmental reading techniques. Students will be encouraged to elect Reading as part of their Language Arts program to concentrate on reading techniques for a short time with definite student-set goals to accomplish.

Content:
A. Speed and comprehension record for each student to show progress
   1. weekly recording of speed and comprehension
   2. use of same reading (SRA) text for each measurement for each student to get true measurement
B. Individually planned reading programs using assorted class materials.
   1. increase speed and comprehension
   2. practice reading for different purposes
   3. learn and practice good reading habits
C. Free reading experiences to pursue interests
   1. magazines
   2. books

Necessary Materials:
A. Appropriate class texts
   1. SRA graded reading materials for intermediate and high school
   2. Reader's Digest Help Yourself to Improve Your Reading, four levels
   3. Scope books

4. Success In Reading 1-6 - Silver Burdett, c 1968
5. phonics and word attack book for high school level

B. Periodicals
1. Scope magazine (class set)
2. Reader's Digest Educational Edition (class set)

C. Equipment
1. stop watch
2. pacer

Additional Comments: Students who have reading difficulties will be encouraged to take developmental reading but will not be forced because motivation is an important factor in reading improvement. Proper materials for the class should make the class easier to teach and more successful.

GRAMMAR

Philosophy: A Grammar test is given to all students when they enter high school and those students who demonstrate a deficiency are required to take a nine week course in basic grammar. In this course the parts of speech are covered thoroughly through sentence patterns. A student should begin to see the relationship of sentence patterns to composition.

Content:

A. Form classes, structure words
B. Sentence patterns
C. Expanding sentence patterns
D. Patterns in composition - study of different ideas which each pattern usually suggests

Necessary Materials:

A. New Ways in English (as teacher reference)
B. Teacher-made handouts
C. Overhead projector

Additional Comments: In this class it is necessary to move slowly, review frequently, and have a variety of handouts for each sentence pattern studied. A textbook or workbook for student use would eliminate much work for the teacher.

SPELLING-VOCABULARY

Philosophy: Spelling-Vocabulary class is an elective course which provides review of basic spelling rules and vocabulary building through learning new words and through word building techniques. Increased sensitivity to words and to the way words are used is a result of this class.

Content: The teacher and class plan goals to meet the expectations of that class. Time is also planned for work on individual problems.

A. Basic spelling rules reviewed with weekly spelling tests
   1. spelling games for review and exposure to new words
   2. homonyms reviewed with quizzes. Warriner's, pp. 629-637
B. Class vocabulary list
   1. two words from students' experiences each week
   2. occasional quizzes over words
   3. etymology and word relationships of words from list discussed in class
C. Study of prefixes, suffixes, and roots for word building
D. Study of word relationships
   1. analogies
   2. synonyms, antonyms, homonyms
E. Word games

Necessary Materials:

A. Warriner's English Grammar and Composition, Complete Course
   1. Spelling rules, pp. 619-633
   2. Vocabulary, pp. 644-652
B. Reader's Digest Grow in Word Power
C. College entrance examination book
D. Wordly Wise by Ruth Rice, Walch, c 1966
E. Assorted other paperbacks

Additional Comments: The Spelling-Vocabulary course was not entirely successful in teaching spelling and better methods are still being sought. Vocabulary instruction was more successful resulting in more interest in words and a better vocabulary.

ELECTIVES

MASS MEDIA

Philosophy: Mass Media is a course designed primarily for the non-college oriented student. It is survey-like in nature and discusses critical evaluation as well as history and development of the popular media forms.

Content:

A. Public opinion and the media-lectures and impromptu speeches
B. Advertizements - speeches and construction of ads
C. Propaganda - speeches including propaganda
D. Journalism - history and development symposiums
E. Magazines - written analysis - symposiums
F. Radio - prepared radio speeches, terminology, talk show analysis after listening to examples on radio symposiums
G. Film - assigned film critique, terminology symposiums on history and development and occupations - reactions (written) on various quotations about film.
H. TV - symposiums on history and development, occupations, design of a new TV show, Marshall McLuhan

I. Popular Records - categorization of records brought by class; symposiums on occupations and development of recording industry.

Necessary Materials:

A. Record player
B. Paperbacks on McLuhan
C. One or two film rentals
D. Film clips
E. Field trips to various stations
F. Radio
G. Could use speech materials i.e. magazines, papers

Additional Comments: This course needs to be offered for at least two quarters as the coverage of all media is superficial in a nine week term. Better use of guest speakers from various stations might improve this course and certainly field trips could greatly add interest.

BUSINESS ENGLISH

Philosophy: Students are encouraged to compose concise business correspondence and reports. Special care is given to creating a favorable impression through high standards of tact, neatness, thoroughness, and conformity to correct rules of grammar, punctuation, and spelling.

Content:

A. Job Search Program
   1. Self-evaluation of job qualifications
   2. Sources for finding employment
   3. Letters of application
   4. Letters asking for references
   5. Completing job application forms
   6. What to expect in a job interview
B. On the job
   1. Correct letter styles
   2. Ordering goods
   3. Letters of acknowledgement
   4. Letters granting and refusing credit
   5. Collection letters
   6. Claim letters
   7. Letters checking on applicant's references
   8. Letters of recommendation
   9. Letters of recommendation
   10. Office memos, invitations, and announcements
C. Research Report
   1. Student investigates jobs that are of interest
   2. Write a short report on one using footnotes and bibliography

Necessary Materials:

A. Teacher made material
B. How to Go About Getting a Job by J.I. Biegeleisen, Gosset and Dunlop Publishers, 1967

C. Reference Manual for Office Employees, 4th edition, Larsen and Koebel, South-Western Publishing Company, 1959
D. The Secretary's Handbook, Eighth Edition, Taintor and Monro, The McMillan Company, 1961
E. Effective English for Business, Fifth Edition, Aurner and Burtness, South-Western Publishing Company, 1962

Additional Comments: Students do not have texts, but if funds were available it would be helpful to have a copy of How to Go About Getting a Job, by J. I. Biegeleisn.

READING AND CONFERENCE

Philosophy: Students electing Reading and Conference class make up a reading list of books on a topic in which they are interested, discuss the books they read with their supervising teacher, and write on topics selected by the teacher. This class was mainly for students who had schedule difficulties and who were willing to work on their own.

Contents:
A. A reading list of five books or the equivalent approved by the teacher
B. Student-teacher conferences on reading
C. Written examination on selected topics

Necessary Materials:
A. Adequate library resources
B. Adequate time for student-teacher conferences

Additional Comments: Students should be encouraged to explore special interests in Reading and Conference and should demonstrate the maturity and interest necessary to pursue projects independently. The supervising teacher must have adequate time scheduled for student-teacher conferences.

ANNUAL

Philosophy: The first nine weeks of the year is devoted to organization of the staff and study of yearbook production which is the main teacher-oriented activity during the year. Most other responsibilities should be assumed by the editor with the teacher assuming an advisory position. The remainder of the year the staff works on production to meet deadlines established by the publishing company.

Content:
A. Layout design and balance
B. Yearbook terms
C. Picture choice
D. Cropping

Necessary Materials:
A. Rough draft layout sheets
B. Unused pictures from past years
C. Annual kit provided by publisher
D. Light board

INTRODUCTION TO JOURNALISM

Philosophy: Learning journalistic techniques and procedures and applying them through production of the school newspaper is the goal of the journalism class.

Content:

A. The press and news in contemporary life
B. Gathering news
C. The news lead
D. Writing a news style
   1. form
   2. newspaper style
E. Covering school news
F. Feature writing
   1. news feature
   2. personality stories
   3. columns
G. Editorial writing
H. Sports writing
I. Headlining
J. Page layout
K. In-depth reporting

Necessary Materials:

A. Press Time, Adams B. Stratton, Prentice-Hall, 1969

Additional Comments: It would be much more effective to have a beginning journalims class and an advanced journalism class, with the advanced class producing the newspaper.

SUMMARY OF OTHER CLASSES

In Contemporary Poetry class, students would explore significant modern poets beginning with T.S. Eliot and ending with poets currently publishing.

In American Literature, the class could study highlights of important periods in American Literature such as American Realism. Another approach could be to study in more depth one period such as American Realism for nine weeks. A third approach could be to study a theme such as social reform for nine weeks. Such a thematic study could be related to American History.

The English Literature class could study important works in the history of English Literature in some depth, emphasizing quality not quantity of works studied. Other formats could follow those suggested for American Literature.

Advanced Speech offered the same hour of the day as the beginning Speech class but during a later quarter will be Speech II or Advanced Speech. Designed to be a sequential follow up to Speech I, this course will offer advanced preparation in persuasion, debate, and discussion as well as basic tournament events not covered in Speech I.

In The Bible as Literature class, students would study the major genres of literature (i.e., biography, novel, short story, poetry) through examples in the Bible. The King James version would be used to show the majestic prose style which so influenced later prose styles and newer versions would be used to show contrasts in style and to better understand some passages.

Seminars could be devised to meet the needs and interests of any group of students. Suggested topics we have considered include American History through the Novel (History and Language Arts staffs work cooperatively); The Film (actual production of a film); Romanticism in Literature; History through Great Speeches, and Greek Tragedy.

Greek Tragedy is designed to examine in depth the epic in Greek history. Attention is given to the role of the hero, as well as the Greek religious practices, history, geography, and culture.

CORBETT REPORT - JANUARY 1970

TITLE OF PRACTICE: Corbett High School Functional Mathematics Option

SCHOOL ADDRESS: Corbett High School
Corbett, Oregon 97019

ADMINISTRATION: John W. Blaser

ADMINISTRATIVE ASS'T.: Dona R. Layton

PROGRAM COORDINATOR: W. Keith Leamon

SUMMARY: The Functional Mathematics Option was initiated and introduced into the curriculum at Corbett High School to help meet the needs of those students who had demonstrated that they were unable to perform the basic fundamentals of mathematics. It was determined that there are many reasons contributing to this lack of mathematical success. However, it was determined that two major criterion could eliminate most of these reasons and allow students to succeed where they had failed. The criterion are:

(1) Provide pertinent instruction at the needed knowledge level.

(2) Promote an interest in mathematics by making it pertinent to daily activities.

TEXT:

A. ANTECEDENTS:

1. IDENTIFICATION OF NEEDS:

Prior to the development of the Functional Mathematics Option, the Corbett High School Mathematics Department taught General Math, Algebra I, Geometry, Algebra II, Trigonometry, and Analysis. No formal scope and sequence was followed other

than state approved texts and curriculum guides.

Students entering Corbett High School in the ninth grade were placed at one of two positions by teacher recommendation. They either took Algebra I or, if the teacher felt they were not adequately prepared, General Mathematics. Oftentimes students were not prepared upon completion of General Math to enroll in Algebra I. As a result, all formal mathematics instruction ended for many students at the ninth grade level.

2. HISTORY OF DEVELOPMENT:

When it was first decided that a better form of Mathematics instruction was needed at this level, it was necessary for the staff to prepare objectives which would cure the existing ills.

The first step was to develop two levels of General Mathematics instruction. By scheduling both sections at the same hour, it was easy to arrange near-individual instruction for many students. It was found that mathematical abilities ranged from third grade to seventh grade levels in this group.

It was found that many of the students who completed a year of instruction by this simple administrative alteration were prepared to enter the college preparatory math program with Algebra I the following year.

At this time an additional fault became apparent. The students who were not academically ready for Algebra I still needed a place to improve their skills. In some cases, readiness was not so much a factor for success as was motivation. Some students could not see the need for further mathematical study.

It was felt that some opportunity should be made available to allow students to develop practical skills. With this thought in mind a course in Vocational Mathematics was developed to serve a three-fold purpose and meet our two original criterion:

(1) Content is organized around life needs in preparation for employment.

(2) The scope is sufficiently broad to include the everyday consumer mathematics needed by individuals to develop functional competency as citizens.

(3) The industrial units include all the basic principles that are required in arithmetic, algebra, geometry, and trigonometry to make mathematics function.

B: **DESCRIPTION OF THE PRACTICE:**

Upon completion of the course in General Math at the ninth grade level, students are screened for probability of success in Algebra I and offered the opportunity for enrollment in Algebra I, if that is their choice. The other option is the Vocational Related Mathematics option. This option, if elected, may be followed for one year or several, depending upon individual needs and desires.

The Vocational Related Mathematics option offers strong practical skills in automotive, carpentry, masonry, plumbing, machine, electrical, printing, sheetmetal, and other trades.

The material covered in each instructional unit is presented in a step-by-step form in which each basic principle is explained and applied. The problem materials are based on sound analyses of need and tested, successful, teaching-learning experiences. Each new concept or principle in mathematics is introduced in such a

manner as to establish a need for mastering it. The introduction is followed, in each unit, by a series of steps which show how the simple rules relating to each principle are used. Immediate application of each rule or principle is made by using, where possible, a practical example. Again, step-by-step procedures with computations are given for each example in order to give meaning to each new principle.

The Corbett School District is not wealthy. This program was designed to work on a low income budget. The most important single factor in making a program of this sort a success is a dedicated and energetic staff. The text for this course is Basic Mathematics Simplified by C. Thomas Olivo, Delmar Publishers, Albany, N.Y. Workbooks have been purchased to follow along with the various trade fields. Much teacher made information is used in conjunction with the purchased materials. The basic text serves as a core to the program and each student concentrates in the trade area in which he is most interested. The basic text provides instructional material for a well-balanced, continuous, integrated program of mathematics based on concrete life needs.

C. TIPS FOR THE IMPLEMENTOR:

1. Algebra I classes are scheduled to enable capable eighth graders from the elementary school to enroll in high school algebra. By allowing these capable youngsters to get a jump on their peers, the remainder of the entering ninth grade is "thinned" for more realistic placement.
2. All sections of General Mathematics are offered to ninth graders at the same hour. This permits team teaching, individualized instruction, and transfer of students within the

instructional zone for providing pertinent instruction at the needed knowledge level.

3. Sections of Algebra I should be made accessible for entry by General Math students who demonstrate they are ready for it and who desire to enroll.
4. Vocational Related Mathematics is made available to all students after the ninth grade for as long as they desire to participate or until graduation. New trade fields offer additional stimulus for continuance.
5. Staff selection for a successful program in a small high school is essential. Industrious, enthusiastic, and co-operative staff must be obtained or the program will die on the vine.

D. CURRENT PRACTICE:

Students enrolled in Vocational Related Mathematics at Corbett High School meet in a large group session once weekly to cover a rule or principle of mathematics that is common to the group. Small group sessions meet for the remainder of the week to work in trade specialty areas. Each group is scheduled with a teacher at least once a week in addition to the large group session. Additional teacher time may be scheduled either to a small group or to individuals as needed or requested. Students are able to progress at their own pace but are responsible for definite advancements.

The small group program helps each student develop a sense of responsibility for working with others and the unscheduled time allows him ample time without feeling "pressured" to work on a long range assignment of his choice. When students have completed assignments or feel the need for a change of pace, they are allowed the freedom of the recreation area.

It should be mentioned that during the initial three or four weeks with relatively little controlled supervision and much freedom due to unstructured time, many students spent much of their time in the recreation area. After a period of adjustment to the "free-time" concept, students began to frequent the library and independent study room more often. At present, the number of students using the recreation area has dropped to a low average of three or four students per day.

The practice of allowing the students to choose their interest areas for study; allowing ample instruction, both group and individual; providing pressure-free time for study; and placing the responsibility for success upon the individual student has been a giant step in helping the low mathematics achiever and the disadvantaged mathematics student to succeed.

CORBETT REPORT - FEBRUARY 1970

TITLE OF PRACTICE: Corbett High School Introductory Physical Science

SCHOOL ADDRESS: Corbett High School
Corbett, Oregon 97019

ADMINISTRATION: John W. Blaser

ADMINISTRATIVE ASS'T: Dona R. Layton

PROGRAM COORDINATOR: G. Dean Morrow

SUMMARY: The Corbett High School Introductory Physical Science course is strongly laboratory-oriented and presents new and traditional subject matter in a unique manner. Schools considering its use should see that their teachers are well prepared in the course materials and methods of presenting them. The course is in sharp contrast to the usual General Science course and, in some ways, it differs from the approach of other modern science courses. In this Introductory Physical Science course an understanding of the atomic nature of matter is the goal of the course. Student experimentation is used as a source of information and not merely as a means of confirming what has already been asserted by the teacher or text.

We believe that this course will greatly facilitate the teaching of physics and chemistry because of an improved orientation and attitude toward science.

TEXT:

A. ANTECEDENTS:

1. HISTORY:

There has been considerable progress in recent years in the teaching of physics, chemistry, and biology in secondary schools. The Physical Science Study Committee course in physics, the Chemical

Bond Approach and Chemical Education Material Study in chemistry, and the Biological Sciences Curriculum Study in biology are well-known. These courses do not, however, exhaust the field of science instruction offered at the pre-university level. In Oregon, science is also taught in grades 7, 8, and 9. By providing new course material for the last three years of high school, the gap between those years and grades 7, 8, 9 widened.

In planning a course to bridge this gap, questions were asked and answers sought. Certainly this approach is not the only answer but it is a step toward a better answer. This course is one-year in length and is aimed at the ninth grade.

2. IDENTIFICATION OF NEEDS:

The greatest handicap faced by teachers is that most students have no experience in observations, no basic laboratory skills, no knowledge of how to apply elementary mathematics to experimental results. They lack the ability to correlate an abstract idea with a concrete situation. Often students have no idea of orders of magnitude, no feeling for approximation, no ability to judge what is important and what is not.

Often their earlier training has given students the idea that science is remote from real life and from anything they can do. For many students the ninth grade science course is their last formal science experience. Our goal was to stimulate students into wanting to go further and learn more. Realistically, we knew that not all students would pursue additional science education. Therefore, our new course must also serve as a terminal course in physical science for many of our students, as well as provide a foundation for further work.

Thus, we must have a program to serve two purposes:

(1) on the one hand to be a sound foundation for future physics, chemistry, and to a lesser extent, biology, and

(2) on the other hand to furnish sufficient nourishment in the essence, the spirit, and the substance of physical science to be a good terminal course for those who will not study physical science later on.

B. DESCRIPTION OF THE PRACTICE:

We believe that there are certain values and skills that can and should be taught in ninth grade science. First, we want to give a feeling for the kind of human effort that is involved in the development of science. We want to put across the point that the root of all science is phenomena and that the names come later. We should like the student to get his information from the original source, from nature itself. This calls for real investigation in the laboratory. But science is not all laboratory work. We have to correlate and generalize our observations. We construct models or theories which can be manipulated logically and which will raise new questions. Later we do other experiments to seek the answers to these questions.

This poses many technical problems in course construction. It is difficult to design experiments which, when handled by ten young fingers, will come out the way you think it should. However, following a schematic drawing in a textbook is not enough.

Time is always an important limiting factor in the laboratory, and this may make it hard to draw valid conclusions from the limited data available. This difficulty can often be relieved by combining the data of all the students and putting it on the board, often in the form of a histogram. Here is a good opportunity to teach the handling of errors.

When students compare their measurements, they see the errors and learn how to decide which results are within the experimental errors.

We save laboratory time by not asking all students to do exactly the same experiment. For example, in connection with the idea of boiling point, all students boil water, but each uses a different quantity and some, unknowingly, get water with various amounts of salt dissolved in it. Each student gets a different graph of temperature versus time, and all of these are placed on the board. We thus have enough information to discuss whether the boiling point depends upon quantity of water or whether there are other significant differences.

C. CONTENT OF THE COURSE:

No particular set of pre-requisites were assumed in the students except some general familiarity with our technical society. In other words, we assumed that the students had seen common household instruments and objects. For example, we assumed they would know what a thermometer is. We would not, however, assume that they had heard about atoms. The student can hold the thermometer in his hand and see the liquid rise when he puts his thumb on the bulb. The atom is another story; he has never seen one. In this course we do not rely on things with which the student has had no association or experience. We give him what he needs to experience in a logical, step-by-step sequence.

We have chosen as a central theme the introductory study of matter.

1. CHARACTERISTIC PROPERTIES:

Scientific inquiry begins when we do things on purpose instead of just compiling our experience as it comes. There is a large variety of characteristic properties to chose from, e.g., density, solubility, boiling point, etc..

2. MIXTURES, PURE SUBSTANCES, AND ELEMENTS:

The course proceeds to the separation of mixtures. We use all these characteristic properties to break up what we find in front of us into as many components as we can. We use the available tools quite indiscriminately, and we remind our students that men used these tools long before they knew there were such things as chemistry and physics. For example, people knew about grain alcohol for several thousand years and used it as a solvent without any chemical theory. We show its use as a solvent, also, without asking what happens or why. The fact is shown that when one substance is put into alcohol, it dissolves; some other substance does not. Here we have a way of separating substances.

From the separation of mixtures we get the idea of a pure substance. We start with something; we heat it, we freeze it, dissolve it, and filter it. We keep doing all kinds of things to it, and we keep getting back to the same substance. We call this a pure substance and show the difference between this and mixtures.

It is possible to add to the experience of distilling, freezing, and crystallizing by permitting a wider range of tools, such as heating with charcoal and boiling in hydrochloric acid to break up those few substances which would not break up under the previous treatment. In this way we get to the idea of elements, by way of operational definition. Elements are those things that do not break up into smaller components, even when they are put in acids or heated or subjected to electric currents, or treated in certain other ways.

3. RADIOACTIVITY:

Ultimately, we want to get an atomic picture of matter. We need

something to give us a hint, some real indication that there is a discreteness in all matter. We have chosen the path through radioactivity to the atomic picture, because radioactivity is one area where discreteness is very much in the foreground. Previously, the word "atom" has not been mentioned, but now we offer the suggestion that all matter may be made up of these particles.

4. THE ATOMIC MODEL:

Now we come to the point where we can theorize and make a model. We re-examine what we have done before, but now we begin to do some abstraction. We start slowly, building as we go - - which is the way science works, in fact. The first idea we propose is that there are particles; these are probably very small, because we never notice them in daily life. The minute we make such a statement to the youngsters, we have accepted an obligation to say how many and how small; otherwise it is a meaningless statement.

We say that atoms are very small things which are different for each element, and that in chemical combination they are grouped together in molecules. This very simple picture already correlates a great deal of information which we have gathered in this course. It explains how we can get an element back out of a chemical combination; all chemical reactions are, in this language, a regrouping of existing things. It makes sense that the total mass remains constant in reactions if we believe that atoms only change positions or change their combinations. Each pure substance, each compound, always has the same composition, because we always take so many of one kind of atom and combine it with so many of another kind.

5. THE KINETIC PICTURE OF HEAT:

Now we come to the next phase where we let the atoms move. Everybody knows that if you open a bottle of gas, the gas will come out; this leads to the idea of molecular motion, and to the molecular picture of heat. We have been using heat all along, but now we want to relate the thermal properties to the atomic picture just as we did the chemical properties. We start the discussion of heat and the gas model of heat without any detailed laws of mechanics, but we make use of analogy. We theorize a molecular picture of two very basic concepts in physics, the temperature and the quantity of heat (which are confused no end by students). We move from the gas into the solid and get the idea that molecules and atoms in a hot substance move faster than in the same substance when cold. We say that if things collide, the fast ones slow down and the slow ones speed up; that if you heat something, it becomes warmer because its molecules move faster and so on. This brings us to the ideas of thermal energy.

In the final unit, thermal energy is measured in calories by its heating effect on water. Specific heats are determined, and then heats of reaction, solution, fusion, and vaporization are studied. These latent forms of heat, not associated with molecular motion, are related to the re-arrangements of atoms in chemical reactions, solution, and changes of state.

D. TIPS TO THE IMPLEMENTOR:

1. Teachers of this type of course should receive additional preparation in methods of handling and presenting course materials.
2. Whenever possible sections of Introductory Physical Science should be scheduled back-to-back with a study hall, physical education

class, or other course common to large numbers of ninth graders. This type of scheduling permits for adjustments to increase the length of laboratory periods on an "on call" basis by co-ordination of only 2 or 3 teachers.

3. Students of low ability or with poor school records of achievement often are highly motivated by the extensive laboratory work and find their greatest success in this area of the course. This interest often provides the incentive for the student to acquire the mathematical and reading skills needed to support the laboratory work.
4. The initial cost per pupil is about $26.00. The annual cost per pupil after the initial investment is about $3.00. These costs do not include printed materials.
5. No separate lab manual is needed. Student laboratory experiments are included where they are appropriate to the logical development of the course.
6. Peg boards provide an easy and inexpensive means by which apparatus can be assembled, moved, or stored, if an experiment requires more than one class hour and scheduling cannot be arranged for an extended lab period.
7. Alcohol burners provide a very adequate source of heat and the experiments have been specifically designed for use of these burners.
8. Minimum room facilities include only flat-topped desks or tables, one sink, and storage space for the peg boards, chemicals, and demonstration apparatus. No electrical or gas outlets are needed at the student's tables.
9. Because a great deal of time is spent in the laboratory, class periods must be long enough to allow for this activity. Our

experience has shown 50 minutes to be an optimum time with an occasional longer session.

10. Time not used in the laboratory is spent discussing with the students the laboratory results, homework problems, and the text. Lectures do not contribute to the teaching of this kind of course. Hence, there is nothing to be gained by the large group instruction methods.